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# CLAIMS

1. Pseudo-isothermal radial chemical reactor for catalytic reactions, comprising a substantially cylindrical shell (2) closed at the opposite ends by respective base plates (3 and 4), a reaction zone (8) in which a respective catalytic bed (11) and a plurality of heat exchangers (22) placed in  
5 said reaction zone (8) are supported, characterised in that it comprises at least one second further reaction zone (26) comprising a respective catalytic bed (29) and a plurality  
10 of heat exchangers (36) placed in said second reaction zone (26), said first and said second reaction zone (8 and 26) being in fluid communication with each other.
2. Chemical reactor according to claim 1, characterised in that said first and said second reaction zone (8 and 26)  
15 are associated in series.
3. Chemical reactor according to claim 2, characterised in that the plurality of heat exchangers (22) of at least one of said reaction zones (8, 26) is in fluid communication with the outside.
- 20 4. Chemical reactor according to claim 3, characterised in that the pluralities of heat exchangers (22, 36) of both of said reaction zones (8, 26) are in fluid communication with each other.
- 25 5. Chemical reactor according to claim 4, characterised in that at least one exchanger of said pluralities of heat exchangers (22, 36) is plate-shaped, rectangular and boxed.
6. Chemical reactor according to claim 5, characterised in that said plurality of exchangers (22) is arranged

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radially, coaxially with respect to the axis (A-A) of the reactor.

7. Method for optimising pseudo-isothermal catalytic reactions, comprising the steps of feeding reactants to a  
5 reaction zone (8) comprising a catalytic bed (11) and a plurality of heat exchangers (22) placed in said catalytic bed (11), characterised in that it comprises the further steps of collecting reactants and products coming from the reaction zone (8), conveying said reactants and products to  
10 a second reaction zone (26) comprising a respective catalytic bed (29) and a respective plurality of heat exchangers (36) placed in said catalytic bed (29), feeding said reactants and products to said second reaction zone (26) and completing the reaction in said catalytic bed  
15 (29).